

I claim:

1. A movable platform apparatus for a transit vehicle having at least an outer wall, said transit vehicle further having a door portal aperture formed through said at least outer wall, said door portal aperture having at least one door for at least partially covering and uncovering said door portal aperture, said transit vehicle additionally having a stairwell formed within a floor portion of said transit vehicle adjacent said door portal aperture, said stairwell having at least one step member, said movable platform apparatus for cooperating with a low stationary platform having a surface disposed horizontally at a height of under 14 inches from a ground level and with a high stationary platform having a surface disposed horizontally at a height greater than 14 inches from said ground level, said movable platform apparatus comprising:

(a) a movable platform having a platform member including a nose portion, said movable platform further having a pair of support portions, each of said pair of support portions attached to each side of said platform member, said movable platform additionally having at least one pair of rolling members rotatably attached to each of said pair of said support portions;

(b) a driving means coupled to said platform member; and

(c) a pair of guide means disposed within said stairwell under said floor portion.

5        2. A movable platform apparatus according to claim 1, wherein said pair of support portions formed are integrally on said platform member.

10        3. A movable platform apparatus according to claim 1, wherein said driving means is coupled to a pinion engaging a rack attached to one of said pair of said support portions, said driving means is selected from one of a foot wheel disposed above said floor portion adjacent an interior wall structure of said transit vehicle and a hand wheel disposed at a  
15        predetermined distance above said floor portion, said hand wheel coupled to said pinion by a power transmission means, said power transmission means is selected from one of a chain, cable, and belt, said pinion has a predetermined configuration to couple to said power transmission means, and a prime mover coupled to said  
20        pinion with a coupling means disposed intermediate said prime mover and said pinion, said prime mover having a connection to a power source of said transit vehicle and a first electrical connection to a control member of said transit vehicle, said

prime mover is enabled by said control member to move said platform member.

4. A movable platform apparatus according to claim 3,  
5 wherein said prime mover is one of an electrical, pneumatic, and hydraulic prime mover.

5. A movable platform apparatus according to claim 1,  
wherein said pair of guide means is a pair of rails having a  
10 predetermined configuration to cooperate with at least two pairs of said rolling members.

6. A movable platform apparatus according to claim 1,  
further comprising a locking means disposed within said movable  
15 platform apparatus, said locking means comprising:

(a) at least one lock having:

(i) a base member having at least one mounting cavity;

(ii) a lock cam pivotally mounted to said base member  
at a first pivot, said lock cam having a lock cavity;

20 (iii) a lock actuator attached to said base member,  
said lock actuator having a movable actuator portion  
engaging a lock step of said lock cam for preventing  
rotation of said lock cam in an unlocking direction while

said movable member is maintained in a locked position, said lock actuator further having an energized actuator portion for withdrawing said moveable actuator portion from engagement with said lock cam for enabling rotation of said lock cam in an unlocking direction, said lock actuator additionally having a second biasing spring means encasing said movable actuator portion intermediate said energized actuator portion and a flange disposed on said movable actuator portion, said second biasing spring means for biasing said movable actuator portion against said lock cam in said locked position;

(iv) a first biasing spring means mounted at said first pivot, said first biasing spring means enabling pivoting of said lock cam in said unlocking direction, said first biasing spring means further enabling movement of said platform member in a deployment direction; and

(b) at least one lock pin engageable with said lock cavity of said lock cam in a locked condition.

7. A movable platform apparatus according to claim 6, wherein said energized actuator portion is a solenoid having a second electrical connection with said control member of said transit vehicle.

8. A movable platform apparatus according to claim 6,  
wherein an attachment and a disposition of said at least one  
lock and said at least one lock pin is reversible between said  
5 transit vehicle and said movable platform apparatus, said at  
least one lock engaging said at least one lock pin for securing  
said movable platform in said first position disposed below said  
floor portion, said at least one lock engaging said at least one  
lock pin for securing said movable platform in said third  
10 position deployed outwardly to at least partially fill a gap  
between said high platform and said outer wall of said transit  
vehicle.

9. A movable platform apparatus according to claim 6,  
15 further comprising a cable attached to a movable member of said  
lock actuator at one end, said cable attached to a remotely  
mounted handle at a distal end, said movable member coupled to  
said movable actuator portion of said lock actuator, said cable  
for manual unlocking of said platform member.

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10. A movable platform apparatus according to claim 1,  
further comprising at least one electrical switch cooperating  
with said at least one locking means, said at least one

electrical switch for enabling an interlocking and a synchronization of said movable platform apparatus movement with an operation of said at least one door.

5        11. A movable platform apparatus according to claim 1, further comprising an obstruction detection means disposed within said transit vehicle, said obstruction detection means having a sensing means connected to said control member of said transit vehicle.

10        12. A movable platform apparatus according to claim 11, wherein said sensing means is coupled to said platform member, said sensing means comprising:

15        (a) a sensing member having a first longitudinal cavity of a first predetermined size, at least one internal rib portion, and an attachment portion;

20        (b) a platform member having a second cavity disposed within said nose portion of said movable member, said second cavity for accepting said attachment portion of said sensing member, said platform member further having a third cavity; and

      (c) a sensing element of a second predetermined size disposed within said first longitudinal cavity of said sensing member, said sensing element having a third electrical

connection portion routed through said third cavity of said movable member for connection to said control system of said transit vehicle.

5           13. A movable platform apparatus according to claim 12, wherein said sensing element comprising an enclosure, a first contact disposed on one surface of said enclosure, and a second contact disposed on the opposite surface of said enclosure, said second contact disposed substantially opposite said first  
10 contact, said first contact and said second contact connected to said third electrical connection portion, said first contact is maintained at a predetermined distance in respect to said second contact under normal condition, said first contact coupling said second contact upon compression of said sensing member enabling  
15 further compression of said enclosure of said sensing element, said coupling producing an electrical signal sent to said control member via said third electrical connection portion of said sensing member.

20           14. A movable platform apparatus according to claim 13, wherein said sensing member is a rubber extrusion.

15. A movable platform apparatus according to claim 11,  
wherein said sensing means is coupled to said movable member,  
said sensing means comprising:

(a) a sensing member of a sealed pressure chamber type  
5 having an attachment portion, said sensing member further having  
a connection portion of a first predetermined diameter;

(b) a platform member having a second cavity disposed  
within said nose portion of said movable member, said second  
cavity for accepting said attachment portion, said movable  
10 member further having a third cavity for accepting said  
connection portion of said nose member; and

(c) a pressure wave switch having a forth electrical  
connection to said control member, said pressure wave switch  
further connected to said connection portion of said first  
15 predetermined diameter, said pressure wave switch for converting  
a pressure differential generated upon compression of said nose  
member into an electrical signal sent to said control member.

16. A movable platform apparatus according to claim 11,  
20 wherein said obstruction detection means is achieved by one of  
deploying said movable platform at a predetermined rate and at a  
predetermined electrical current, monitoring such deployment  
with said control member, and disabling such deployment upon



said control member detecting changes to said one of said predetermined rate and said predetermined electrical current.

17. A passenger ingress and egress conversion system in a transit vehicle having at least an outer wall, said transit vehicle further having a door portal aperture formed through said at least outer wall, said transit vehicle additionally having a stairwell formed within a floor portion of said transit vehicle, said stairwell disposed adjacent said door portal aperture, said stairwell having at least one step member, said passenger ingress and egress conversion system for cooperating with a low stationary platform having a surface disposed horizontally at a height of under 14 inches from a ground level, said passenger ingress and egress conversion system for cooperating with a high stationary platform having a surface disposed horizontally at a height of greater than 14 inches from said ground level said passenger ingress and egress conversion system comprising:

(a) a door portal aperture closure means disposed within said door portal aperture for at least partially covering and uncovering said door portal aperture, said door portal closure means selected from the group consisting of at least one plug door movable first outwardly and then substantially linear along

said at least outer wall, at least one sliding door movable in a substantially linear path into a door cavity to uncover such door portal aperture for passenger ingress and egress, said door cavity disposed between said at least outer wall and an inner wall of said transit vehicle, and at least one sliding door movable in a substantially linear path along said outer wall; and

(b) a movable platform apparatus disposed adjacent said door portal aperture substantially exposing said stairwell for enabling ingress and egress to and from said low stationary platform in a first position being disposed under said floor portion, said movable platform apparatus substantially covering said stairwell for enabling ingress and egress to and from said high stationery platform in a second position being disposed about an inner surface of said door portal aperture closure means and in a third position, being for filling at least part of a gap in between said high stationary platform and said outer wall, said movable platform apparatus including:

(i) a movable platform having a platform member including a nose portion, said movable platform further having a pair of support portions, each of said pair of support portions attached to each side of said platform member, said movable platform additionally having at least one

pair of a rolling members rotatably attached to each of  
said pair of said support portions;

(ii) a driving means coupled to said platform member; and

(iii) a pair of guide means disposed within said  
5 stairwell, said pair of guide means further disposed  
under said floor portion.

18. A passenger ingress and egress conversion system  
according to claim 17, wherein said door portal closure means  
10 includes a recess disposed outwardly of said transit vehicle,  
said recess enabling said movable platform apparatus to at least  
partially reduce a gap prior to said door portal closure means  
moving for at least partially uncovering said door portal  
aperture.

15 19. A passenger ingress and egress conversion system  
according to claim 17, further comprising a disability aid means  
disposed within said floor portion, said disability aid means  
compliant with ADA regulations for enabling ingress and egress  
20 of disabled passengers, said disability aid means further  
enabling ingress and egress of disabled passengers using a  
wheelchair.

20. A passenger ingress and egress conversion system according to claim 19, wherein said disability aid means comprising said floor portion of not more than .5 inches in thickness having said nose portion formed by a combination of a first element being of .25 inches maximum in thickness and disposed in the substantially vertical plane, said nose portion further formed by a second element being of a .25 inches maximum in thickness and disposed at 45 degree angle in respect to said first element.

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21. A passenger ingress and egress conversion system according to claim 19, wherein said disability aid means comprising said floor portion of more than .5 inches in thickness having said second element of said nose portion disposed inwardly into said transit vehicle at a first predetermined angle, said first predetermined angle is about equal to or less than 10.5 degrees.

22. A passenger ingress and egress conversion system according to claim 19, wherein said disability aid means comprising a floor member having a hinge for coupling to said floor portion, said hinge biasing said floor member for disposition in the vertical plane within said stairwell, said

hinge enabling rotation of said floor member in a clockwise direction to a second predetermined angle, said disability aid means further comprising said guide means and said platform member disposed at a third predetermined angle in respect to  
5 said floor portion, said third predetermined angle enabling said nose portion of said platform member to be disposed substantially coplanar with said floor portion in said third position, said second predetermined angle is about equal to or less than 10.5 degrees, said third predetermined angle is about  
10 equal to or less than 10.5 degrees.

23 A passenger ingress and egress conversion system according to claim 17, further comprising an obstruction detection means disposed within said transit vehicle, said  
15 obstruction detection means having a sensing means connected to said control member of said transit vehicle.

24. A passenger ingress and egress conversion system according to claim 23, wherein said sensing means comprising a  
20 transmitter disposed on one of said stairwell wall members and a receiver disposed on an opposite stairwell wall member, said transmitter and said receiver having a fifth electrical connection to said control member of said transit vehicle, said

transmitter maintaining a signal path with said receiver under normal conditions, said signal path being disabled upon detection of an object disposed within said stairwell, said disabled signal path enabling said control member to prevent  
5 deployment of said movable platform.

25. A passenger ingress and egress conversion system according to claim 24, wherein said transmitter and said receiver are one of ultrasonic, photo element, and infrared.  
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26. A passenger ingress and egress conversion system in a transit vehicle having a first outer wall and a second outer wall, said transit vehicle further having a first door portal aperture formed through said first outer wall and a second door  
15 portal aperture formed through said second outer wall, said second door portal aperture is directly opposite said first door portal aperture, said transit vehicle additionally having first and second stairwells formed within a floor portion of said transit vehicle, said first stairwell disposed adjacent said  
20 first door portal aperture, said second stairwell disposed adjacent said second door portal aperture, said first and second stairwells each having at least one step member, said passenger ingress and egress conversion system for cooperating with a low

stationary platform having a surface disposed horizontally at a height of under 14 inches from a ground level, said passenger ingress and egress conversion system for cooperating with a high stationary platform having a surface disposed horizontally at a height of about equal to or greater than 14 inches from said ground level said passenger ingress and egress conversion system comprising:

(a) a first door portal aperture closure means disposed within said first door portal aperture for at least partially covering and uncovering said first door portal aperture, said first door portal closure means being one of at least one plug door movable first outwardly and then substantially linear along said first outer wall and at least one sliding door movable in a substantially linear path into a door cavity to uncover such door portal aperture for passenger ingress and egress, said door cavity disposed between said first outer wall and a first inner wall of said transit vehicle, and at least one sliding door movable in a substantially linear path along said first outer wall;

(b) a second door portal aperture closure means disposed within said second door portal aperture for at least partially covering and uncovering said second door portal aperture, said second door portal closure means being one of at least one plug

door movable first outwardly and then substantially linear along said second outer wall and at least one sliding door movable in a substantially linear path into a door cavity to uncover such door portal aperture for passenger ingress and egress, said door cavity disposed between said second outer wall and a second inner wall of said transit vehicle, and at least one sliding door movable in a substantially linear path along said second outer wall; and

(c) a movable platform apparatus disposed intermediate said first stairwell and said second stairwell, said movable platform apparatus movable in a first direction for enabling ingress and egress to and from said low stationary platform through said first door portal aperture, said movable platform apparatus movable in a second direction for enabling ingress and egress to and from said low stationary platform through said second door portal aperture, said movable platform apparatus including:

(i) a movable platform having a platform member including a nose portion, said movable platform further having a pair of support portions, each of said pair of support portions attached to each side of said platform member, said movable platform additionally having at least one



pair of rolling members rotatably attached to each of  
said pair of said support portions;

(ii) a driving means coupled to said platform member; and

(iv) a pair of guide means disposed within said  
5 stairwell, under said floor portion.